

CLAIMS

1. A method for producing an optical film comprising a base and a birefringent layer, the method comprising:
 - 5 a step of coating a material of the birefringent layer on the base so as to form a coating film; and
 - a step of solidifying the coating film on the base so as to form the birefringent layer,
 - where the material that is coated on the base in the coating step is
 - 10 prepared as a coating solution by dispersing or dissolving the material in a solvent, and
 - the solvent used exhibits solubility with respect to the base.
2. The method according to claim 1, further including a step of stretching or
- 15 shrinking the base before or after the solidifying step so as to stretch or shrink the coating film or the birefringent layer on the base.
3. The method according to claim 1, wherein the base is composed of a transparent polymer.
- 20 4. The method according to claim 1, wherein the material for the base comprises triacetylcellulose, and the solvent comprises at least one solvent selected from the group consisting of ethyl acetate, cyclohexanone, cyclopentanone and acetone.
- 25 5. The method according to claim 1, wherein the material of the base comprises at least either an isobutene-N-methyl maleimide copolymer and a acrylonitrile-styrene copolymer, and the solvent contains at least one solvent selected from the group consisting of ethyl acetate, methyl isobutyl ketone,
- 30 methyl ethyl ketone, cyclohexanone, cyclopentanone and acetone.

6. The method according to claim 1, wherein the material of the birefringent layer comprises a non-liquid crystalline polymer.

5 7. The method according to claim 6, wherein the non-liquid crystalline polymer is at least one polymer selected from the group consisting of polyamide, polyimide, polyester, polyaryl ether ketone, polyether ketone, polyamide imide and polyester imide.

10 8. The method according to claim 1, wherein $D(y)$ satisfies a condition below with respect to $D(a)$:

$$D(y) > D(a) \times 0.01$$

where $D(a)$ denotes a thickness of the birefringent layer and $D(y)$ denotes a thickness of infiltration of the solvent into the base.

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9. An optical film, which is produced in the method for producing an optical film according to claim 1, and which comprises a base and a birefringent layer laminated directly on the base.

20 10. The optical film according to claim 9, wherein the birefringent layer and the base satisfy all the conditions (I) to (III) below:

$$\Delta n(a) > \Delta n(b) \times 10 \quad (I)$$

$$1 < (n_x - n_z) / (n_x - n_y) \quad (II)$$

$$0.0005 \leq \Delta n(a) \leq 0.5 \quad (III)$$

25 where $\Delta n(a)$ denotes a birefringence of the birefringent layer, $\Delta n(b)$ denotes a birefringence of the base, which are represented respectively by the formulae below, and in the formulae and in the condition (II), n_x , n_y and n_z denote respectively refractive indices in the X-, Y- and Z-axes directions of the birefringent layer, n_x' , n_y' and n_z' denotes refractive indices in the X-, Y- and
30 Z-axes directions of the base; the X-axis direction denotes an axial direction

presenting a maximum refractive index within the birefringent layer and the base, the Y-axis direction denotes an axial direction perpendicular to the X-axis within the plane, and the Z-axis direction denotes a thickness direction perpendicular to the X-axis and the Y-axis,

$$\begin{aligned} \Delta n(a) &= [(n_x + n_y) / 2] - n_z \\ \Delta n(b) &= [(n_x' + n_y') / 2] - n_z'. \end{aligned}$$

11. The method according to claim 1, wherein the thickness D(y) with respect to the thickness D(a) satisfies the condition below:

$$D(y) > D(a) \times 0.01$$

where D(a) denotes a thickness of the birefringent layer and D(y) denotes a thickness of infiltration of the solvent into the base, the material of the birefringent layer being dispersed or dissolved in the solvent.

12. The optical film according to claim 9, further comprising a polarizer.

13. A liquid crystal panel comprising a liquid crystal cell and the optical film according to claim 9, wherein the optical film is arranged on at least one surface of the liquid crystal cell.

14. A liquid crystal display comprising the liquid crystal panel according to claim 13.

15. An image display device comprising the optical film according to claim 9.